Strong's 'Quantitative Study of Variation in the Smaller North American Shrikes.'[1] — This is an attempt to employ statistical methods in the study of variation in a group of birds, and to apply the "precise criterion of species" of Davenport to a problem of bird classification. The group of birds chosen for this purpose is the Shrikes of the *Lanius ludovicianus* group. The material employed consists of 174 skins, which include only specimens properly available for such a purpose. Specimens showing mutilations or lacking data as to sex have been rejected.

The characters especially considered are length of wing, length of tail, length of bill, depth of bill, curvature of bill, and color. The methods employed are too abstruse for description in the present connection, and the interested reader is referred to Dr. Strong's paper for a clearer understanding of his manner of procedure. The paper is illustrated by numerous diagrams showing 'frequency polygons' for all the characters considered. In the quantitative determination of color the Bradley and Milton 'color-top' was employed, the mechanism and use of which is duly described. He considers that "one of the most important results reached is the determination of the relative variability of different characters in a group of birds representing geographical areas of considerable size."

Some of his remarks near the close of the paper are worthy of careful consideration. Speaking of the various races of the *L. ludovicianus* group, he says: "I believe that *migrans* is as worthy of recognition as *gambelli*. Whether it is profitable to encumber nomenclature with the names of these races, based on slight variations, is a question which is worthy of further consideration.

"The power of discriminating fine shades of color varies in different persons, and it can be highly developed by education. At the present time there is much activity among certain systematists in the production of new subspecies for geographical varieties, which long experience and special adeptness enable them to distinguish. A variation, no matter how slight, that can be correlated with geographical range is considered to warrant an addition to nomenclature; but the discovery and description of geographical races can be carried on almost *ad infinitum*." In regard to the use of the method of the 'precise criterion,' he says, he does not argue for its universal use, but believes that it is both "desirable and practicable to employ it in certain problems of taxonomy," such, for instance, as the one he has in hand. While the ordinary work of classification does not require the precision in treatment furnished by purely

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[1] Contributions from the Zoölogical Laboratory of the Museum of Comparative Zoölogy at Harvard College. No. 121. A Quantitative Study of Variation in the Smaller North-American Shrikes. By R. M. Strong. With eight figures. American Naturalist, Vol. XXXV, April, 1901, pp. 271–298.

quantitative methods, he believes that the problems of race distinction "need the precision of the Precise Criterion."

"The contention," he continues, "that quantitative methods are less useful than those ordinarily employed because of the large amount of material required, is mischievous, for it argues that generalizations professing precision are possible by methods that are not precise," and the present tendency of hair splitting among certain ornithologists is timely and well warranted. If the hair splitters were compelled to adopt the laborious method of the 'precise criterion' system, it would doubtless prove a wholesome check upon their prolificness. In the matter of naming geographical forms which in many cases at least, will ultimately be relegated to the limbo synonymy.—J. A. A.

Stone 'On Moult and Alleged Colour-change in Birds.'[1]—This paper is a reply to some criticisms of Mr. Stone's paper on moult, published in the Proceedings of the Philadelphia Academy in 1896, by Mr. J. L. Bonhote in 'The Ibis' for October 1900. Mr. Stone maintains an admirable attitude in reference to the advocates of direct change of pigment in mature feathers, and his statements should do much toward encouraging a careful consideration of the subject by his critics. Mr. Stone says: "'It has now been *demonstrated* that at least many (and apparently all) individuals of every species of bird in Eastern North America which undergoes a spring change of plumage accomplish that change by a moult. If the same thing is not true of European birds, we have certainly a strange state of affairs.'" Mr. Stone very justly complains that the papers of Mr. Bonhote and others who defend color change are lacking in respect to data as to the condition of the specimens examined.

Mr. Stone's paper, in fact, is a brief summary of the results attained by investigations on this side of the Atlantic in reference to how birds acquire the colors of the nuptial dress, and of the methods employed in these investigations. It would seem that this candid statement of the case should lead to careful consideration of the evidence supposed to be antagonistic to the results obtained by extended and careful study of the subject by American ornithologists.—J. A. A.

Seton-Thompson and Hoffmann's 'Bird Portraits.'[2]—'Bird Portraits' consists of 20 half-tone reproductions of drawings by Ernest Seton-Thompson, with descriptive text by Mr. Hoffmann. The birds whose portraits are here given consist of the following species: Song Sparrow, Flicker,

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[1] On Moult and Alleged Colour-change in Birds. By Witmer Stone. The Ibis, April, 1901, pp. 177–183.

[2] Bird Portraits | By Ernest Seton-Thompson | With Descriptive Text | By Ralph Hoffmann | Boston | Ginn & Company | The Athenæum Press | 1901 —4to, pp. 40, with 20 half-tone plates.